



Emotional problems and health-related quality of life: population-based study

Camila Stéfani Estancial Fernandes¹ · Margareth Guimarães Lima¹ · Marilisa Berti de Azevedo Barros¹

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Abstract

Purpose The aim of the present study was to evaluate the influence of emotional problems on health-related quality of life (HRQoL) according to the type of emotional problem, degree of limitation, and perceived control of the problem with treatment.

Method A population-based cross-sectional study with probabilistic stratified cluster sampling was conducted in 2014 and 2015 in the city of Campinas, Brazil. A total of 2145 individuals aged 18 years or older participated in the study. HRQoL was evaluated using the SF-36[®] questionnaire. The dependent variables were the score of the eight scales of the SF-36[®]. The independent variables were self-perceived emotional problems, type of emotional problem (according to ICD 10), degree of limitation, and perceived control of the problem with treatment. Mean scores were calculated and regression coefficients were adjusted for sex, age, number of health problems, and chronic diseases using multiple linear regression analysis.

Results The prevalence of emotional problems was 32.7%. Among the individuals with a problem, the mean SF-36[®] scores were lower on all domains. Regarding the type of emotional problem, a complaint of depression exerted a stronger negative impact on HRQoL scores than anxiety. Moreover, a greater degree of limitation caused by the problem led to lower mean SF-36[®] scores. The negative impact on HRQoL was substantially greater among those who did not have the problem under control.

Conclusion In conclusion, the findings underscore the importance of the prevention and control of emotional problems with the aim of reducing the impact on HRQoL.

Keywords Mental disorders · Health-related quality of life · SF-36 · Epidemiological surveys · Cross-sectional study

Introduction

Mental disorders pose a major challenge to health professionals due to the high prevalence rates and often debilitating effects [1, 2]. The global prevalence of mental disorders is around 10% [3] and, according to the Global Burden of Diseases Study (2016), these conditions account for 18.7% of all years lived with disability [1]. Depression and anxiety are, respectively, classified as the fifth and ninth among the most disabling diseases in both developed and developing countries [1]. Mental disorders also contribute to the intensification and complication of several diseases [4], lead to a

more intensive use of healthcare services [5], and increase absenteeism and place a strain on family budgets [6].

Considering the burden of mental disorders, it is important to address the impact on health-related quality of life (HRQoL), as such evaluations provide greater knowledge regarding the effect of these disorders on functional, physical, mental, and social aspects of health and well-being [7]. Previous studies that have evaluated the impact of mental problems on HRQoL have concentrated on specific mental disorders [8, 9], disorders in outpatients [10–16], and specific age groups [17, 18] or the effects of specific treatments [13, 19]. To the best of our knowledge, the only studies conducted in Brazil with a representative sample of the population that evaluated the impact of mental problems on HRQoL were conducted with particular age groups [17, 18]. Studies with a representative sample of the general population in other countries are also scarce [9, 20–22] as the majority have involved outpatients [11–13].

✉ Camila Stéfani Estancial Fernandes
camilaestancial@yahoo.com.br

¹ Department of Public Health, School of Medical Sciences, State University of Campinas, Campinas, São Paulo, Brazil

It is important to analyze issues involved in mental disorders, such as types of problems, restrictions, severity, and treatment, which can have different impacts on HRQoL. Studies conducted with outpatients report that more severe disorders have a greater negative impact on quality of life [16, 23], especially when cases are not treated adequately [24].

However, few population-based studies and none in Latin America have analyzed the influence of the characteristics of the emotional problem on HRQoL. Therefore, the present study fills a gap in the field. We hypothesize that the impact on quality of life and health status of the emotional problem differs according to the type, levels of control, and severity of the disorder.

Considering its importance and the scarcity of population-based studies on this topic, the aim of the present study was to evaluate the influence of emotional problems on HRQoL according to the type of emotional problem, degree of limitation and perceived control of the problem with treatment in a population of individuals aged 18 years or older representative of a city in the state of São Paulo, Brazil.

Methods

A population-based, cross-sectional study was conducted involving the analysis of data from a sample of 2145 community-dwelling individuals aged 18 years or older residing in urban areas of the city of Campinas, which is a large city located in the state of São Paulo (southeastern Brazil) with a population estimated at 1,164,098 inhabitants in 2015, 98.3% of whom reside in urban areas. Campinas is considered the 3rd largest city in the state of São Paulo and the 14th in Brazil. The gross domestic product of Campinas is the fourth largest in the state of São Paulo and 11th largest in the country. The Human Development Index was 0.805 in 2010, occupying the 28th position for this index among the 5565 municipalities of Brazil [25]. The data used in the present study were extracted from the Campinas Health Survey (hereafter denominated ISACamp) conducted in 2014/15.

The sample of the survey was obtained using stratified probabilistic cluster sampling in two stages: census sector and residence. In the first stage, 14 census sectors were selected from each of the five administrative health districts of the city, totaling 70 sectors. The sectors were selected with probability proportional to size given by the number of residences per sector. In the second stage, residences were selected in each sector using a systematic draw applied to the updated lists of addresses.

As the aim of ISACamp 2014/15 was to analyze aspects related to three subpopulations of the city of Campinas (adolescents, adults and seniors), the following age groups constituted the domains of the study: 10 to 19 years, 20 to 59 years and 60 years or older. The number of individuals

to compose the sample size was estimated to be 1000 adolescents, 1400 adults, and 1000 seniors. These sample sizes were defined to estimate prevalence ratios of 50% (corresponding to maximum variability), with a 95% confidence interval, accepting a 4 to 5% of sampling error and a design effect of 2 (due to the clustering sample design). To obtain the desired sample size, 3119, 1029, and 3157 residences were selected for interviews with adolescents, adults, and seniors, respectively, considering non-response rates of 27, 22, and 20% for the three age groups, respectively. At each home, all residents in the particular age group were interviewed. The decision not to perform intra-residence selection in the field was due to the fact that this type of design is similar in terms of precision and is less costly in comparison with performing the selection of an interviewee per residence [25]. Further details on the sampling process are available on the following webpage: <https://www.fcm.unicamp.br/fcm/ccas-centro-colaborador-em-analise-de-situacao-de-saude/isacamp/2014>.

Data from ISACamp 2014/15 were collected with the aid of a pre-coded questionnaire that contained predominantly closed-ended questions organized into 11 thematic blocks. Data collection was performed by trained interviewers with the selected individuals and the data were recorded on a portable computer (tablet).

HRQoL was assessed using the Medical Outcomes Study 36—Item Short Form—Health Survey (SF-36[®]) [26, 27], which has been translated and validated for use in Brazil [28] and was submitted to a population-based validation by Laguardia et al. in 2013 [29]. The SF-36[®] is a generic instrument used to assess health status and health-related quality of life. The questionnaire has 36 items distributed among eight domains: physical functioning, role physical (limitations due to issues of physical health), bodily pain, general health perceptions, vitality, role emotional (limitations due to emotional issues), social functioning and mental health [27].

The dependent variables were the scores of the eight domains of the SF-36[®]. The method proposed for the instrument was followed for the determination of the scores of each domain [27]. The total scores on each domain were converted to a scale of 0 to 100, with higher scores corresponding to a better health status [27].

The independent variables were a report of an emotional problem, the type of emotional problem, degree of limitation imposed by the problem and perceived control of the problem with treatment. The occurrence of an emotional problem was self-reported based on the answer to the following question: “*Do you have any type of emotional or mental problem, such as anxiety, depression, panic syndrome, obsessive–compulsive disorder, schizophrenia or some other problem?*” (yes or no). If the answer was affirmative, questions were posed addressing the type of emotional problem. The problem

mentioned was later coded according to the International Classification of Diseases and Related Health Problems (ICD-10) [30] and degree of limitation imposed by the problem (none, mild or severe). The perception of the control of the problem was investigated using the following question: “*In your judgment, is your emotional problem being taken care of and under control? If so, how much?*” (responses: not controlled, partially controlled or completely controlled).

Prevalence and prevalence ratios were estimated for the reports of an emotional problem according to demographic, socioeconomic, and health (number of chronic diseases and other health problems) characteristics adjusted for sex and age using multiple Poisson regression analysis. The variable “number of chronic diseases and other health problems” was based on the sum of the following morbidities with a medical diagnosis: arterial hypertension, diabetes mellitus, cardiovascular disease (angina, myocardial infarction and cardiac arrhythmia), cancer, arthritis/rheumatism/arthrosis, osteoporosis, rhinitis/sinusitis, asthma/bronchitis/emphysema, tendonitis/repetitive strain injury/work-related musculoskeletal disorder, vascular problem (varicose veins and stroke), hypercholesterolemia and back disease/problem; and morbidities self-reported by the participants (complaints and symptoms): headache/migraine; back pain/problem, allergy, dizziness/vertigo, urinary problem (urinary tract infection/cystitis and urinary incontinence), and insomnia.

For the analysis of HRQoL, the mean scores and standard errors were calculated for each of the SF-36[®] domains according to the independent variables. Coefficients were estimated using simple and multiple linear regression models. The variables sex, age and number of chronic diseases and other health problems were incorporated into the multiple linear regression models as confounding factors for the adjustment of the models. These adjustment variables were incorporated into the multiple regression due to their association with the SF-36 domains in the study population, as performed in previous studies [18, 31, 32]. Thus, one simple and one multiple linear regression model was created for each independent variable in the study.

All analyses performed in the present study considered the weights stemming from the complex sampling design and non-response weights. For such, the survey (svy) module of Stata 15.0 (Stata Corp., College Station, USA) was used.

The ISACamp 2014/2015 project received approval from the Human Research Ethics Committee of Campinas State University (certificate number: 409.714 of September 30th, 2013). All interviewees signed a statement of informed consent.

Results

Among the residences selected for the interviews, the refusal and dropout rates were 7.4% and 4.4%, respectively. Among the individuals aged 18 years or older identified in the selected residences to be interviewed, these rates were 20.5% and 1.9%, respectively. Therefore, the final sample was composed of 2145 individuals aged 18 years or older, 47.3% of whom were male with a mean age of 41.8 ± 0.77 years and 52.7% of whom were female with a mean age of 43.9 ± 0.75 years.

Individuals who reported emotional problems other than depression and anxiety were excluded from the analyses due to the low frequency ($n = 33$).

The prevalence of the report of an emotional problem was 32.7% (CI 95% 28.9 to 36.4) and was significantly higher among the women (PR = 1.6). The prevalence increased with the increase in the number of chronic diseases and other health problems (Table 1). Anxiety (78.7%) and depression (21.3%) were the most frequently reported emotional problems. The findings indicate a 25.7% prevalence rate of anxiety and 7.0% prevalence rate of depression in the population. Among the individuals with emotional problems, 6.5% reported the onset of the disorder in the previous 12 months, 18.5% reported having the problem for 2 to 5 years, 17.3% for 6 to 10 years, and the majority (57.7%) for more than 10 years. The majority (51.0%) reported not having any limitation due to the problem, 35.9% reported some limitation, and 13.1% considerable limitation with regard to daily activities. Only 23.3% of the individuals with emotional problems were in treatment at the time of the interview. Among these individuals, 58.7% were on medication (66.0% depression; 52.3% anxiety), 18.6% were on medication and also underwent psychotherapy (20.8% depression; 16.8% anxiety) and 17.3% underwent psychotherapy alone (24.8% anxiety; 8.6% depression); only 5.4% reported other treatments (6.1% anxiety; 4.5% depression). The majority reported that the problem was either partially (46.5%) or completely (40.4%) controlled (data not shown in tables).

Regarding HRQoL, the mean SF-36[®] scores and adjusted coefficients according to the occurrence and type of emotional problem are displayed in Table 2. In the occurrence of an emotional problem, mean SF-36[®] scores were lower on all domains. The most affected domains were social functioning ($\beta = -10.6$) and mental health ($\beta = -13.4$). Regarding the type of emotional problem, depression was more strongly associated with HRQoL than anxiety, especially regarding the role physical, vitality, role emotional, social functioning, and mental health domains. The associations were strong on all scales (more than 7 points) in individuals who reported depression.

Table 1 Prevalence and prevalence ratios of emotional problems according to demographic, socioeconomic, and health characteristics. Campinas, Brazil 2014–2015

Variables	<i>n</i> (%) ^a	Prevalence (%)	Adjusted PR (95% CI) ^b
Total	2145 (100.0)	32.7	
Sex		(<0.0001)* χ^2	
Male	925 (47.3)	25.0	1
Female	1220 (52.7)	39.7	1.6 (1.34–1.88)*
Age group		(0.2412)	
18 to 39	721 (48.4)	31.3	1
40 to 59	458 (33.9)	35.6	1.1 (0.94–1.34)
60 to 79	802 (15.1)	31.1	1.0 (0.82–1.15)
80 or more	164 (2.7)	31.8	0.9 (0.73–1.23)
Schooling (years)		(0.1969)	
0 to 4	728 (19.0)	30.0	1
5 to 11	1040 (53.7)	34.7	1.2 (0.99–1.52)
12 or more	376 (27.3)	30.7	1.1 (0.84–1.38)
Family income per capita		(0.6828)	
≤ 1 BMMW ^c	769 (35.5)	34.7	1
> 1 to $\leq 3 \times$ BMMW	1092 (49.7)	31.9	0.9 (0.76–1.18)
$> 3 \times$ BMMW	272 (14.8)	31.6	0.9 (0.70–1.23)
Number of chronic diseases and other health problems		(<0.0001)*	
0	271 (16.5)	7.2	1
1 to 2	625 (34.5)	25.7	1.7 (1.16–2.61)*
3 to 4	503 (23.1)	23.3	2.5 (1.72–3.54)*
5 or more	643 (26.0)	43.9	4.3 (3.00–6.16)*

^aPercentage weighted for sampling design

^bPR (95% CI) Prevalence ratio adjusted for sex and age (95% confidence interval)

^cBMMW: Brazilian monthly minimum wage

χ^2 Between parentheses: *p* value of χ^2 test

*Statistically significant difference

Anxiety was more strongly associated with the mental health and social functioning scales and was not associated with physical functioning, role physical, and bodily pain (Table 2).

Table 3 displays the evaluation of HRQoL according to the degree of limitation with regard to daily activities due to the emotional problem. Even in the absence of limitations, social functioning and mental health were significantly associated. The negative impact on HRQoL increased with the increase in the degree of limitation due to the problem and associations were found for all domains except bodily pain. Among individuals with severe limitation, the scores reduction varied from -10.4 points for physical functioning to -33.4 for social functioning and were approximately twofold greater compared to those who reported having only some limitation. The occurrence of moderate or severe limitation tends to exert a greater negative impact on individuals with depression compared to those with anxiety (Table 3).

Table 4 displays the evaluation of HRQoL according to the perceptions of the control of the emotional problem

with treatment. Among the individuals who reported that the problem was completely controlled, associations were found only for the role emotional ($\beta = -8.6$), social functioning ($\beta = -12.5$), and mental health ($\beta = -9.0$) domains. When the problem was partially controlled or not controlled, associations with HRQoL were found for all domains except physical functioning and bodily pain. The associations increased substantially in those who reported that the problem was not controlled, especially with regard to general health perceptions ($\beta = -28.4$), vitality ($\beta = -38.2$), role emotional ($\beta = -47.0$), social functioning ($\beta = -51.3$), and mental health ($\beta = -47.9$) (Table 4). The perception of partial control or no control of the problem exerted a negative impact in individuals who reported anxiety and those who reported depression. However, the impact tends to be greater among those with depression, who had a reduction of more than 15 points on all scales, except bodily pain (Table 5).

Table 2 Means and regression coefficients (RC) of scores on SF-36[®] domains according to occurrence and type of emotional problem. Campinas, Brazil 2014–2015

SF-36 [®] domains	Emotional problem			Type of emotional problem	
	Mean (SE)		RC ^b (SE)	Anxiety (<i>n</i> = 518)	Depression (<i>n</i> = 194)
	No ^a (<i>n</i> = 1433)	Yes (<i>n</i> = 712)		RC ^b (95% CI)	RC ^b (95% CI)
Physical functioning	90.5 (0.7)	84.2 (1.4)	−2.8 (1.3)*	−0.5 (−3.5;2.2)	−7.6 (−13.2;−2.1)*
Role physical	89.9 (0.9)	81.5 (1.6)	−3.4 (1.5)*	−0.8 (−4.4;2.8)	−13.0 (−18.6;−7.4)*
Bodily pain	80.7 (1.1)	69.4 (1.6)	−3.7 (1.5)*	−2.2 (−5.5;1.1)	−9.3 (−15.8;−2.8)*
General health	82.5 (0.8)	74.1 (1.2)	−5.5 (1.3)*	−3.8 (−6.3;−1.3)*	−11.5 (−17.5;−5.5)*
Vitality	80.3 (0.8)	67.5 (1.5)	−8.5 (1.5)*	−6.0 (−8.8;−3.3)*	−18.0 (−24.9;−11.1)*
Role emotional	93.2 (0.6)	81.8 (1.4)	−7.8 (1.5)*	−5.4 (−8.3;−2.6)*	−16.9 (−24.8;−9.0)*
Social functioning	93.0 (0.6)	78.4 (1.5)	−10.6 (1.5)*	−7.9 (−10.9;−5.0)*	−20.7 (−28.8;−12.7)*
Mental health	83.1 (0.6)	66.0 (1.4)	−13.4 (1.5)*	−10.6 (−13.1;−8.1)*	−23.9 (−31.0;−16.9)*

RC: difference between mean scores of categories analyzed in comparison with reference category

SE standard error, 95% CI 95% confidence intervals

^aReference category

^bRC = adjusted regression coefficients for sex, age and number of chronic diseases and other health problems (95% CI)

**p* < 0.05

Discussion

The prevalence of reported emotional problems found in this study was 32.7%, which is similar to rates reported in other studies conducted in Brazil [33, 34]. A population-based study conducted in São Paulo with individuals aged 18 years or older found a 29.6% prevalence rate of mental disorders in the previous 12 months [33]. Another population-based study also found prevalence rates of mental problems of 32.5% in the city of São Paulo and 31.2% in the city of Rio de Janeiro in the previous year among individuals 15 to 75 years of age [34]. In these studies, anxiety and depression were also the most frequent, with rates of 20% and 8%, respectively [33, 34]. The World Mental Health Surveys of the World Health Organization found considerable variability in the prevalence rates of mental disorders, ranging from 7.4% in Japan to 27% in the United States in the previous 12 months [35].

Regarding HRQoL, the individuals who reported some emotional disorder had lower scores on all dimensions of the SF-36[®]. Likewise, a study conducted in the city of Pelotas (southern Brazil) involving young adults 18 to 24 years of age found lower scores on all scales of the SF-36[®] among those with common mental disorders, especially the vitality, role emotional, and mental health domains [17]. In a study investigating the impact of chronic diseases on HRQoL among seniors residing in different regions of the state of São Paulo, Brazil, depression/anxiety were among the most disabling chronic diseases, exerting negative impacts mainly on vitality, role emotional, social functioning, and mental

health [18]. On the international scene, the authors of a study conducted in Germany using the SF-36[®] found lower scores of the mental health scales among individuals aged 18 years or older with the mental disorder in the 12 months preceding the interview [20]. In all these studies, the physical dimensions of health status were also affected, albeit to a lesser extent.

Regarding the type of emotional problem, anxiety and depression were the most cited and were associated with a decline in HRQoL, with depression exerting a more harmful effect. Studies conducted in other countries also report the negative impact of depressive disorders on HRQoL [9, 21, 36]. The domains with the largest reductions in scores due to depression were mental health and social functioning (−23.9 and −20.7 points, respectively), which was expected, as the former measures psychological suffering and the latter measures the extent to which social relations are affected as a result of the depressive disorder [27, 37]. According to the Global Burden of Diseases Study (GBD 2016) [1], depression and anxiety are respectively fifth and ninth among the main diseases that contribute to years lived with disability, which partially explains the negative impact on HRQoL.

The impact on HRQoL increased with the perceived increase in the degree of limitation caused by the problem, with the mental dimensions the most affected (role emotional, social functioning and mental health). No previous studies evaluating this association were found. However, investigations involving the use of the SF-36[®] on outpatients report that the severity of depressive symptoms (determined using a specific instrument: the Beck Depression Inventory)

Table 3 Means scores on SF-36® domains of group without emotional problem and regression coefficients (RC) according to degree of limitation due to emotional problem. Campinas, Brazil 2014–2015

SF-36® domains	No problem ^a (n = 1433)	Degree of limitation due to emotional problem		
		RC ^b (SE)		
	Mean (SE)	No limitation (n = 342)	Mild limitation (n = 278)	Severe limitation (n = 92)
Physical functioning	90.5 (0.7)	1.6 (1.6)	-4.6 (1.6)*	-10.4 (4.1)*
Role physical	89.9 (0.9)	0.4 (1.8)	-5.5 (2.3)*	-14.1 (4.3)*
Bodily pain	80.7 (1.1)	-3.3 (1.9)	-2.6 (2.1)	-4.9 (4.6)
General health	82.5 (0.8)	-1.2 (1.4)	-6.9 (1.9)*	-20.9 (3.7)*
Vitality	80.3 (0.8)	-2.9 (1.8)	-11.0 (1.9)*	-23.1 (5.0)*
Role emotional	93.2 (0.6)	-1.8 (1.4)	-9.5 (2.4)*	-31.0 (5.0)*
Social functioning	93.0 (0.6)	-5.0 (1.9)*	-11.9 (2.7)*	-33.4 (6.2)*
Mental health	83.1 (0.6)	-8.0 (1.8)*	-15.2 (1.8)*	-33.1 (4.4)*
SF-36® domains	No problem ^a (n = 1433)	Anxiety (n = 518)		
		RC ^b (95% CI)		
	Mean (SE)	(n = 280)	(n = 198)	(n = 40)
Physical functioning	90.5 (0.7)	1.5 (-1.9; 5.0)	-4.8 (-8.4; -1.1)*	-1.9 (-10.1; 6.4)
Role physical	89.9 (0.9)	1.2 (-3.0; 5.5)	-4.8 (-10.1; 0.5)	-3.7 (-13.1; 5.7)
Bodily pain	80.7 (1.1)	-3.4 (-7.3; 0.6)	-1.2 (-6.1; 3.8)	-0.02 (-14.1; 13.5)
General health	82.5 (0.8)	-1.5 (-4.7; 1.6)	-5.1 (-8.9; -1.1)*	-16.5 (-26.6; -6.4)*
Vitality	80.3 (0.8)	-3.4 (-7.1; 0.3)	-8.8 (-13.3; -4.2)*	-12.6 (-23.1; -2.0)*
Role emotional	93.2 (0.6)	-1.1 (-3.7; 1.5)	-9.0 (-14.7; -3.3)*	-22.4 (-31.4; -13.4)*
Social functioning	93.0 (0.6)	-4.5 (-8.4; -0.7)*	-9.8 (-15.8; -3.9)*	-26.7 (-41.1; -12.3)*
Mental health	83.1 (0.6)	-7.3 (-10.8; -3.8)*	-12.5 (-16.6; -8.5)*	-23.5 (-33.7; -13.4)*
SF-36® domains	No problem ^a (n = 1433)	Depression (n = 194)		
		RC ^b (95% CI)		
	Mean (SE)	(n = 62)	(n = 80)	(n = 52)
Physical functioning	90.5 (0.7)	0.4 (-5.4; 6.1)	-5.2 (-10.4; -0.03)*	-21.8 (-36.3; -7.2)*
Role physical	89.9 (0.9)	-5.4 (-12.2; 1.3)	-9.2 (-16.4; -1.9)*	-27.8 (-40.4; -15.1)*
Bodily pain	80.7 (1.1)	-8.9 (-19.9; 2.2)	-8.3 (-16.4; -0.2)*	-10.9 (-21.5; -0.3)*
General health	82.5 (0.8)	1.1 (-5.5; 7.6)	-13.3 (-18.8; -7.8)*	-26.1 (-35.5; -16.7)*
Vitality	80.3 (0.8)	-5.0 (-14.6; 4.7)	-18.8 (-23.9; -13.6)*	-36.5 (-48.4; -24.6)*
Role emotional	93.2 (0.6)	-5.6 (-13.8; 2.7)	-11.0 (-18.3; -3.7)*	-42.0 (-58.3; -25.6)*
Social functioning	93.0 (0.6)	-7.6 (-16.5; 1.3)	-19.9 (-29.3; -10.5)*	-42.2 (-58.9; -25.5)*
Mental health	83.1 (0.6)	-10.6 (-19.0; -2.1)*	-23.8 (-30.7; -16.8)*	-44.7 (-54.5; -34.8)*

RC: difference between mean scores of categories analyzed in comparison with reference category

SE standard error, 95% CI 95% confidence intervals

^aReference category

^bRC = adjusted regression coefficients for sex, age and number of chronic diseases and other health problems (*p* value)

**p* < 0.05

is a strong predictor of a low HRQoL [16, 23]. In a longitudinal study conducted in the Netherlands (Delta Study) for a 24-months period, an increase in the level of depressive symptoms corresponded to a significant and progressive reduction in the scores of the eight SF-36® subscales, with a more pronounced reduction on the scales of the mental

component [16], which is in agreement with the present findings.

Among the individuals who reported having no limitations due to mental disorders, the social functioning and mental health scales were still impaired. Quality of life scores diminished in the occurrence of mild limitation and

Table 4 Means scores on SF-36® domains of individuals with no emotional problem and regression coefficients (RC) according to perception of control of emotional problem with treatment. Campinas, Brazil 2014–2015

SF-36® domains	No problem ^a (<i>n</i> = 1433)	Degree of control of problem with treatment		
		Completely controlled (<i>n</i> = 75)	Partially controlled (<i>n</i> = 85)	Not controlled (<i>n</i> = 17)
	Mean (SE)	RC ^b (SE)		
Physical functioning	90.5 (0.7)	− 3.7 (3.1)	− 4.5 (2.5)	− 14.3 (8.6)
Role Physical	89.9 (0.9)	− 8.3 (4.7)	− 8.3 (3.5)*	− 25.0 (9.6)*
Bodily pain	80.7 (1.1)	− 4.2 (4.1)	− 5.8 (4.2)	− 2.4 (5.0)
General health	82.5 (0.8)	− 6.1 (3.7)	− 12.2 (3.1)*	− 28.4 (5.4)*
Vitality	80.3 (0.8)	− 5.7 (4.2)	− 17.5 (3.7)*	− 38.2 (5.6)*
Role Emotional	93.2 (0.6)	− 8.6 (3.7)*	− 20.6 (4.8)*	− 47.0 (8.1)*
Social functioning	93.0 (0.6)	− 12.5 (5.5)*	− 22.5 (4.8)*	− 51.3 (8.7)*
Mental health	83.1 (0.6)	− 9.0 (3.7)*	− 21.1 (3.3)*	− 47.9 (4.7)*

RC: difference between mean scores of categories analyzed in comparison with reference category
SE standard error

^aReference category

^bRC = adjusted regression coefficients for sex, age and number of chronic diseases and other health problems (*p* value)

**p* < 0.05

were drastically reduced in the occurrence of severe limitation, with similar impacts on social functioning and mental health. It is therefore important to be attentive to the possible aggravation of the diseases that lead to limitations, as these are indicators of a greater impact on HRQoL.

Regarding the control of the emotional problem among those who are undergoing treatment, the domains of the mental aspects (role emotional, social functioning and mental health) remained affected even when the individuals reported that the problem was completely controlled, which is in agreement with findings described in other studies [16, 38]. On the other hand, the role emotional, social role, and mental health domains were strongly impacted in cases for which the individual reported the non-control of the problem, with a reduction of more than 40 points. These findings underscore the importance of control of the emotional problem to improve one's quality of life and health status, especially among individuals with depression, as the SF-36 scores were considerably lower when the individuals reported partial control or no control of the problem. Data from the Brazilian National Health Survey reveal that only half of individuals with a diagnosis of depression make use of medication for treatment [39], which is lower than the percentage found in the present investigation (66%). Besides medicinal treatment, 18.6% of the individuals in the present study used medication together with psychotherapy, 17.3% underwent psychotherapy alone and 5.4% reported other treatments. It is therefore important to provide access to adequate treatment for mental disorders, whether medicinal or not, and to monitor the success of therapy in order to diminish the negative impact on quality of life and the disabilities generated by non-control of the problem.

One of the limitations of the present study was the use of self-reported information for all variables analyzed. The validity of such information can vary with the type of health problem, the severity of symptoms and the demographic, cultural and socioeconomic characteristics of the interviewees [4, 40]. However, self-reported diseases constitute a type of information that is often used in population-based surveys and studies have demonstrated its validity [41–43]. Although the cross-sectional design does not enable the determination of causality, the items on the SF-36® refer to the previous month the interview and most of the individuals with emotional problems reported having the disorder for more than 1 year.

One of the strength of our study was the analysis of data from a representative sample of the population of the city of Campinas, Brazil, which was achieved using a complex sampling design. Moreover, the importance of this investigation stems from the fact that it is the first population-based study to evaluate the association between the degree of negative impact on HRQoL in individuals who report emotional problems and factors related to these problems in a population aged 18 years or older using the SF-36®. It is important to study the characteristics involved in mental problems, such as the type of problem, imposed restrictions, and control of the problem, considering the specificity of the associations for each issue.

In conclusion, the data demonstrate a high prevalence rate of emotional problems in the population of Campinas and that such problems exert a significant negative impact on HRQoL. The intensity of this impact and the affected domains varied in accordance with the type of emotional problem and degree of limitation. Moreover, the scores on

Table 5 Means scores of SF-36® domains in individuals with no emotional problem and regression coefficients (RC) according to perception of control of emotional problem with treatment according to type of emotional problem. Campinas, Brazil 2014–2015

SF-36® domains	No problem ^a (n = 1433)	Degree of control of problem with treatment—Anxiety	
		Completely controlled	Partially controlled or not controlled
	Mean (SE)	RC ^b (95% CI)	
		(n = 31)	(n = 51)
Anxiety			
Physical functioning	90.5 (0.7)	−0.6 (−7.8; 6.5)	−0.7 (−6.5; 5.1)
Role Physical	89.9 (0.9)	−2.1 (−18.1; 13.9)	−4.9 (−13.3; 3.5)
Bodily pain	80.7 (1.1)	−6.3 (−18.8; 6.3)	−3.8 (−13.1; 5.4)
General health	82.5 (0.8)	−13.3 (−24.2; −2.5)*	−7.3 (−13.6; −1.0)*
Vitality	80.3 (0.8)	−5.2 (−11.9; 1.6)	−14.8 (−23.9; −5.7)*
Role Emotional	93.2 (0.6)	−4.9 (−16.1; 6.2)	−20.4 (−33.2; −7.6)*
Social functioning	93.0 (0.6)	−18.9 (−38.7; 1.0)	−21.2 (−32.6; −9.9)*
Mental health	83.1 (0.6)	−6.5 (−16.0; 2.9)	−20.6 (−28.3; −12.8)*
SF-36® domains	No problem ^a (n = 1433)	Degree of control of problem with treatment—Depression	
	Mean (SE)	Completely controlled	Partially controlled or not controlled
		RC ^b (95% CI)	
		(n = 44)	(n = 51)
Depression			
Physical functioning	90.5 (0.7)	5.4 (−15.6; 4.7)	−15.1 (−27.1; −3.1)*
Role physical	89.9 (0.9)	−15.7 (−25.7; −5.7)*	−24.7 (−36.3; −13.1)*
Bodily pain	80.7 (1.1)	−4.0 (−15.1; 7.1)	−9.5 (−19.4; 0.4)
General health	82.5 (0.8)	1.7 (−6.7; 10.2)	−28.1 (−35.0; −21.3)*
Vitality	80.3 (0.8)	−8.8 (−24.1; 6.5)	−34.0 (−42.5; −25.6)*
Role emotional	93.2 (0.6)	−13.4 (−25.5; −1.2)*	−35.4 (−51.3; −19.6)*
Social functioning	93.0 (0.6)	−8.7 (−19.3; 1.8)	−40.7 (−55.9; −25.4)*
Mental health	83.1 (0.6)	−13.7 (−25.7; −1.7)*	−38.3 (−47.2; −29.3)*

RC: difference between mean scores of categories analyzed in comparison with reference category

95% CI 95% confidence intervals

^aReference category

^bRC = adjusted regression coefficients for sex, age and number of chronic diseases and other health problems (*p* value)

**p* < 0.05

the mental health dimensions were moderately lower even among those who reported that the problem had been completely controlled and the impact on quality of life was much stronger among those who reported that the problem was not controlled. These findings underscore the importance of preventing and controlling emotional problems, which exert negative impacts on the social relations, functioning, and well-being of the affected population.

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Compliance with ethical standards

Conflict of interest All authors declare that they have no conflict of interest.

Ethical approval All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards. The ISACamp 2014/2015 Project received approval from the Human Research Ethics Committee of Campinas State University (Certificate Number: 409.714 of September 30th, 2013). This study was approved by the Human Research Ethics Committee of Campinas State University under number: CAAE: 02181418.9.0000.5404. All interviewees signed a statement of informed consent.

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